

Student Essay on The Effects of Temperature on Amylase.

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Essay

In this coursework piece I shall investigate the effects of temperature on the actions of amylase, explain how and why enzymes and where they work. Enzymes are biological catalysts, this mean that they are substances that speed up a reaction but do not get used up themselves. Amylase (the enzyme we are using) is found in the saliva and is secreted in the pancreas. Amylase is the enzyme that is produced by carbohydrates when they are broken down from large insoluble molecules to smaller soluble molecules, this happens so that the sugars from starch can be diffused through the walls of the small intestine and into the bloodstream.

STARCH MALTOSE

Prediction: I predict that as the temperature increases the speed of the reaction will also increase. When a particular temperature is reached I believe the rate of reaction will decrease dramatically. I believe this because most chemical reactions happen faster when the temperature is higher; for example enzymes work well in the human body because they have adapted to the temperature (37.5°C, in this case we have substituted this for 40°C). At even higher temperatures the reaction is faster because it makes it easier for the enzymes to react, however this also means that the reaction will not be as effective.

Results:

Boiling Temp.

Temperature (°C) Time when reaction ended (s)

1. 330
2. 420
3. 300

Freezing Temp.

Temperature (°C) Time when reaction ended (s)

1. n/a
2. n/a
3. n/a

(Results not available because the reaction never began.)

Body Temp.

Temperature (°C) Time when reaction ended (s)



1. 120
2. 150
3. 120

Room Temp.

Temperature (°C) Time when reaction ended (s)

1. 120
2. 180
3. 120

Apparatus:

Iodine Starch Stop Clock Ice

Amylase Test Tube Water Bath Kettle

Thermometer Glass Rod Beaker Dimple Tray

Analysis: From my graph I can see that my prediction has been proved to be correct because the error bar for the body temperature results have the smallest range of temperatures and works the quickest. My prediction has also been proved right by the fact that when the reaction reaches a certain temperature the reactions speed will decrease dramatically. This is shown in the graph by the time of my boiling temperature results, these are considerably higher in temperature and in time scale.

So, in conclusion to my experiment I have conducted a successful test with the results that were expected.